

SHRI MATA VAISHNO DEVI UNIVERSITY, KATRA
School of Electrical & Civil Engineering
B. Tech. Minor-II, 2019-20 (Odd Sem.)

Entry No: 19BCE031

Date: 27-09-2019

Total Number of Pages: [01]

Total Number of Questions: [06]

Course Title: **Fundamental of Electrical Engineering**

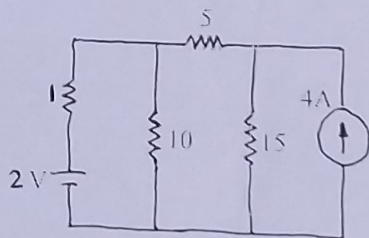
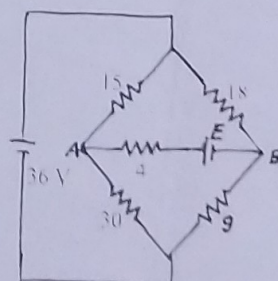
Course Code: **EEL-1006**

Time Allowed: 1.5 Hours

Max Marks: [30]

Instructions / NOTE

- Attempt All Questions. Scientific Calculator is allowed in this paper.
- Support your answer with neat freehand sketches/diagrams, wherever appropriate.
- Assume an appropriate data / information, wherever necessary / missing.

Q1.	Explain resonance in parallel combination of R-L ^{and} branch ^{branch} containing capacitor only. Draw its phasor diagram and what is the frequency and current at resonance in term of R, L and C. [05]
Q2	<p>Solve for the power delivered to the $10\ \Omega$ resistor in the circuit shown in Fig.1 using <i>Superposition Theorem</i>. All Resistance are in ohms. [05]</p>  <p style="text-align: right;">Handwritten calculations: $\frac{15 \times 10}{15 + 10} = 6$</p> <p style="text-align: right;">Fig.1.</p>
Q3.	<p>Find the current flowing through the $4\ \Omega$ resistance using <i>Thevenin's Theorem</i> in Fig.2 when $E = 12V$. [05]</p>  <p style="text-align: right;">Handwritten calculation: $\frac{10 \times 1}{1 + 1} = 5$</p> <p style="text-align: right;">Fig.2.</p>
Q4	Derive the relation between phase voltage, phase current (R, Y, B) and line voltage, line current in star connection where Y phase lags R by 120° and B phase leads R by 120° . Show in phasor the phase difference between Phase voltage and line voltage. [05]
Q5	Explain the principle of operation, construction and expression for deflection of a PMMC type instrument. [05]

Handwritten calculation: $\frac{45 \times 127}{45 + 127}$

Handwritten calculation: $\frac{125}{12}$

Handwritten: 45 27

Q.6. Calculate the value of R which will absorb maximum power from the circuit as given in Fig.3. Also, calculate value of maximum power. [05]

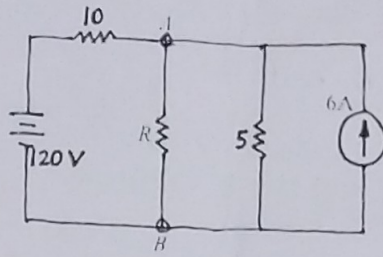


Fig.3

SHRI MATA VAISHNO DEVI UNIVERSITY, KATRA
School of Electrical & Civil Engineering
B. Tech. Major, 2019-20 (Odd Sem.)

Entry No:

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Date: 10-12-2019

Total Number of Pages: [02]

Total Number of Questions: [05]

Course Title: Fundamental of Electrical Engineering

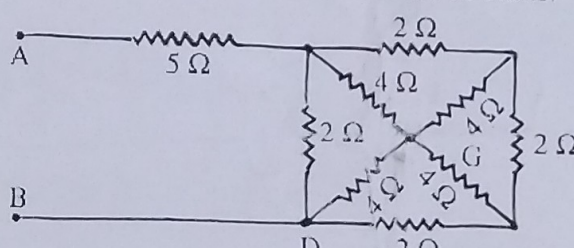
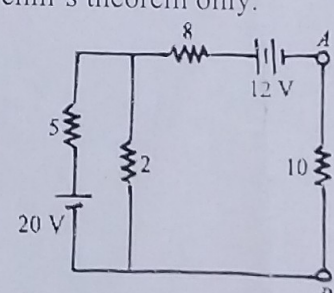
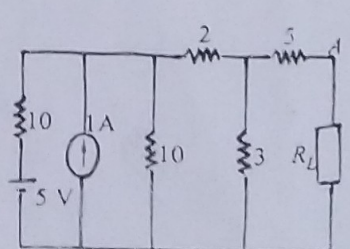
Course Code: EEL-1006

Time Allowed: 3.00 Hours

Max Marks: [50]

Instructions / NOTE

- i. Attempt All Questions. Scientific Calculator is allowed in this paper but no exchange of stationary item and Calculator is allowed.
- ii. Support your answer with neat freehand sketches/diagrams, wherever appropriate.
- iii. Assume an appropriate data / information, wherever necessary / missing.

Q1.	<p>(a) Derive the value of average and RMS value of voltage for a pure sinusoidal waveform considering maximum value of voltage is V_m.</p> <p>(b) What is form Factor and peak factor in AC voltage?</p> <p>(c) Use delta-star conversion to find resistance between terminals 'AB' of the circuit shown in Fig. 1. All resistances are in ohms.</p>	[03]	CO1
	 <p style="text-align: right;">Fig. 1</p>		
Q2.	<p>(a) For the circuit shown in Fig. 2, calculate the current in the 10 ohm resistance. Use Thevenin's theorem only.</p> <p>(b) In the circuit shown in Fig. 3, obtain the condition from maximum power transfer to the load R_L. Hence determine the maximum power transferred.</p>	[05]	CO2
	 <p style="text-align: right;">Fig. 2</p>		
	 <p style="text-align: right;">Fig. 3</p>		

Q.3	(a) Derive the relation between phase voltage, phase current (R, Y, B) and line voltage, line current in Delta connection where Y phase lags R by 120° and B phase leads R by 120° . Show in phasor the phase difference between line current and phase current.	[05]	CO3
	(b) Explain different types of method for measuring power in 3-Phase system.	[02]	CO3
	(c) What is the essential torques in indicating type instrument? Explain.	[03]	CO3
Q.4	(a) Derive the equation for induced emf on primary and secondary side of transformer. Also, draw No load phasor diagram of transformer.	[05]	CO4
	(b) Explain eddy current and Hysteresis losses? Draw B-H curve also.	[02]	CO4
	(c) What is the similarity in magnetic and electric circuit in terms of different parameter in these circuits?	[03]	CO4
Q.5	(a) Explain different types of DC generators with their construction and working principle.	[05]	CO5
	(b) How rotor rotates in 3-phase induction motor? Explain. What is slip?	[02]	CO5
	(c) What are the different types of 1-phase induction motor? Explain any one.	[03]	CO5

CO	Question Mapping	Total Marks	Total Number of Students (to be appeared in Exam)
CO1	1(a), 1(b), 1(c)	10	100
CO2	2(a), 2(b)	10	
CO3	3(a), 3(b), 3(c)	10	
CO4	4(a), 4(b), 4(c)	10	
CO5	5(a), 5(b), 5(c)	10	
TOTAL		50	